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09/903,790	07/12/2001	Ryoichi Matsuoka	S004-4333	1497

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EXAMINER

KIBLER, VIRGINIA M

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 07/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/903,790

Applicant(s)

MATSUOKA, RYOICHI

Examiner

Virginia M Kibler

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☒ Claim(s) 1-5 and 7 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claim 1-5 and 7 are objected to because of the following informalities: "data; for the semiconductor device;" should be changed to "data of the semiconductor device;" in claim 1, line 11. Appropriate correction is required.

Claims 2-5 and 7 depend on claim 1, and are thereby objected to.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitations "the pattern observation device" in lines 4-5 and "the stage error" in lines 17-18.

Claim 6 recites the limitations "the pattern observation device" in lines 5-6 and "the CAD data" in line 10.

There are insufficient antecedent basis for these limitations in the claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo et al. (5,872,862).

Regarding claim 1, Okubo et al. ("Okubo") discloses carrying out observational positioning of the pattern observation device so that an observation center of the specified portion is placed in an observational field of view to acquire image data of the semiconductor device (Col. 5, lines 16-21; Col. 7, lines 31-37; Col. 8, lines 1-59); calculating an offset amount between the observation center and a center of the observational field of view from the image data and CAD graphics data corresponding to the image data (Col. 8, lines 46-67 through Col. 10, lines 1-10); and performing positional control by compensating the stage error based on the offset amount so that the observation center is aligned with the center of the observational field of view (Col. 13, lines 10-25). Okubo discloses carrying out observational positioning of the pattern observation device including determining a magnification (Col. 8, lines 1-26) so that an observation center of the specified portion is placed in an observational field of view. Okubo does not appear to expressly state using a low magnification factor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to specify a low magnification factor. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with either the

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magnification disclosed by Okubo or the low magnification factor because both place the observation center of the specified portion in an observational field of view. Therefore, it would have been obvious to one of ordinary skill in the art to modify Okubo to obtain the invention as specified in claim 1.

Regarding claim 2, the arguments analogous to those presented above for claim 1 are applicable to claim 2. Okubo discloses determining the magnification taking the stage precision into consideration (Col. 6, lines 1-23) for performing observational positioning of the pattern observation device so that the observation center of the specified portion is placed in the observational field of view (Col. 8, lines 1-26).

Regarding claims 3 and 7, Okubo discloses the CAD graphics data describes the CAD graphics having its center on the observation center (Figure 5A), and an offset amount is calculated from the coordinate data of the observation center of the specified portion of the image (Figure 5B) based on the magnification and the coordinate data corresponds to the center point of the CAD graphic (Col. 8-10).

Regarding claim 4, Okubo discloses the offset amount is calculated as an amount of image shift on and within the observation plane (Col. 1, lines 55-67, Col. 2, lines 1-13).

Regarding claim 5, Okubo discloses extracting a pattern edge based on the magnification and the offset amount is calculated from the obtained edge data and the CAD graphics data (Col. 1, lines 55-67, Col. 2, lines 1-13).

Regarding claim 6, the arguments analogous to those presented above for claim 1 are applicable to claim 6. Okubo discloses a designation means for designating the specified portion (Col. 5, lines 16-21; Col. 7, lines 31-37), memory means 127 (Figure 2)

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for storing CAD data corresponding to the pattern, image data acquisition means for acquiring pattern image data of the semiconductor device by performing observational positioning so that the observation center of the specified portion is placed in the observational field of view in response to the designation means (Col. 8, lines 1-59), extraction means 105 (Figure 1) for extracting edge line segment data by performing pattern edge extraction based on the pattern image data, means for obtaining CAD line segment data 103 corresponding to the pattern image data in response to the designation means and the memory means, means for calculating an offset amount 108 between the observation center and the center of observational field of view by comparing the CAD line segment data to the edge line segment data (Col. 8-10), and position control means for aligning the observation center with the center of observational field of view by compensating a stage error of the stage based on the offset amount (Col. 13, lines 10-25).

Other Prior Arts Cited

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. No. 5,561,293 to Peng et al. for failure analysis with CAD layout navigation and FIB/SEM inspection;

U.S. Pat. No. 5,604,819 to Barnard for determining offset between images of an IC;

U.S. Pat. No. 6,246,787 to Hennessey et al. for knowledgebase generation and management; and

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Kwang et al., "CAD Driven High Precision E-Beam Positioning," IEEE 1993, pages 928-935.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Virginia M Kibler whose telephone number is (703) 306-4072. The examiner can normally be reached on Mon-Thurs 8:00 - 5:30 and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Virginia Kibler
06/27/04

MEHRDAD DASTOURI
PRIMARY EXAMINER

